CLAIMS

1. An audio reproducing apparatus, comprising:

a first signal processing circuit for processing input audio signals of N channels;

generating and processing means for inputting left channel directional components and right channel directional components of the output audio signals of said first signal processing circuit and generating signals that represent the positions of sound images corresponding to the left channel directional components and right channel directional components as sound image components;

a second signal processing circuit for processing audio signals that are output from said generating and processing means on each channel so as to equivalently accomplish a sound field of M (where M ≤ N) electrical - acoustic converting units;

first signal processing means for supplying output audio signals of said second signal processing circuit to the M electric - acoustic converting units, causing the M electric - acoustic converting units to reproduce the output audio signals, and localizing the sound images of the audio signals at any positions of the listener;

audio signals that are output to the M electric - acoustic converting units; and

second signal processing means for inputting

the audio signals and equivalently processing the audio signals corresponding to transfer functions from the M electric - acoustic converting units to both the ears of the listener,

wherein the output signals of said second signal processing means are reproduced with the M electric - acoustic converting units.

2. An audio reproducing apparatus, comprising:

a first signal processing circuit for processing input audio signals of N channels;

a variably attenuating circuit for inputting left channel directional components and right channel directional components of the output audio signals of said first signal processing circuit, varying the amounts of sound images corresponding to the left channel directional components and right channel directional components as sound image components, and outputting signals that represent the positions of the sound images;

a second signal processing circuit for processing audio signals that are output from said variably attenuating circuit on each channel so as to equivalently accomplish a sound field of M (where $M \leq N$) electrical - acoustic converting units;

first signal processing means for supplying output audio signals of said second signal processing circuit to the M electric - acoustic converting units,

causing the M electric - acoustic converting units to reproduce the output audio signals, and localizing sound images of the audio signals at any positions of the listener;

audio signals that are output to the M electric - acoustic converting units; and

second signal processing means for inputting the audio signals and equivalently processing the audio signals corresponding to transfer functions from the M electric - acoustic converting units to both the ears of the listener,

wherein the output signals of said second signal processing means are reproduced with the M electric - acoustic converting units.

3. An audio reproducing apparatus, comprising:

a first signal processing circuit for processing input audio signals of N channels;

a variable phase circuit for inputting left channel directional components and right channel directional components of the output audio signals of said first signal processing circuit, varying the phases of the audio signals corresponding to the left channel directional components and right channel directional components as sound image components, and outputting signals that represent the positions of the sound images;

a second signal processing circuit for

processing audio signals that are output from said variable phase circuit on each channel so as to equivalently accomplish a sound field of M (where M ≤ N) electrical - acoustic converting units;

first signal processing means for supplying output audio signals of said second signal processing circuit to the M electric - acoustic converting units, causing the M electric - acoustic converting units to reproduce the output audio signals, and localizing sound images of the audio signals at any positions of the listener;

audio signals that are output to the M electric - acoustic converting units; and

second signal processing means for inputting the audio signals and equivalently processing the audio signals corresponding to transfer functions from the M electric - acoustic converting units to both the ears of the listener,

wherein the output signals of said second signal processing means are reproduced with the M electric - acoustic converting units.

4. An audio reproducing apparatus, comprising:

a first signal processing circuit for processing input audio signals of N channels;

first generating and processing means for inputting left channel directional components and right channel directional components of the output audio

signals of said first signal processing circuit and generating signals that represent the positions of sound images corresponding to the left channel directional components and right channel directional components as sound image components;

second generating and processing means for generating audio signals corresponding to synchronous components of output audio signals of said first signal processing circuit;

a second signal processing circuit for processing audio signals that are output from said second generating and processing means on each channel so as to equivalently accomplish a sound field of M (where $M \leq N$) electrical - acoustic converting units;

first signal processing means for supplying output audio signals of said second signal processing circuit to the M electric - acoustic converting units, causing the M electric - acoustic converting units to reproduce the output audio signals, and localizing sound images of the audio signals at any positions of the listener;

audio signals that are output to the M electric - acoustic converting units; and

second signal processing means for inputting the audio signals and equivalently processing the audio signals corresponding to transfer functions from the M electric - acoustic converting units to both the ears

of the listener,

wherein the output signals of said second signal processing means are reproduced with the M electric - acoustic converting units.

5. An audio reproducing apparatus, comprising:

a first signal processing circuit for processing input audio signals of N channels;

a variably attenuating circuit for inputting left channel directional components and right channel directional components of the output audio signals of said first signal processing circuit, varying the amounts of attenuation corresponding to the left channel directional components and right channel directional components as sound image components, and outputting signals that represent the positions of the sound images;

generating and processing means for generating audio signals corresponding to synchronous components of output signals of said first signal processing circuit;

a second signal processing circuit for processing audio signals that are output from said generating and processing means on each channel so as to equivalently accomplish a sound field of M (where M ≤ N) electrical - acoustic converting units;

first signal processing means for supplying output audio signals of said second signal processing

circuit to the M electric - acoustic converting units, causing the M electric - acoustic converting units to reproduce the output audio signals, and localizing sound images of the audio signals at any positions of the listener;

audio signals that are output to the M electric - acoustic converting units; and

second signal processing means for inputting the audio signals and equivalently processing the audio signals corresponding to transfer functions from the M electric - acoustic converting units to both the ears of the listener,

wherein the output signals of said second signal processing means are reproduced with the M electric - acoustic converting units.

6. An audio reproducing apparatus, comprising:

a first signal processing circuit for processing input audio signals of N channels;

a variable phase circuit for inputting left channel directional components and right channel directional components of the output audio signals of said first signal processing circuit, varying the phases of the audio signals corresponding to the left channel directional components and right channel directional components as sound image components, and outputting signals that represent the positions of the sound images;

generating and processing means for generating audio signals corresponding to synchronous components of output signals of said first signal processing circuit;

a second signal processing circuit for processing audio signals that are output from said generating and processing means on each channel so as to equivalently accomplish a sound field of M (where M ≤ N) electrical - acoustic converting units;

first signal processing means for supplying output audio signals of said second signal processing circuit to the M electric - acoustic converting units, causing the M electric - acoustic converting units to reproduce the output audio signals, and localizing sound images of the audio signals at any positions of the listener;

audio signals that are output to the M electric - acoustic converting units; and

second signal processing means for inputting the audio signals and equivalently processing the audio signals corresponding to transfer functions from the M electric - acoustic converting units to both the ears of the listener,

wherein the output signals of said second signal processing means are reproduced with the M electric - acoustic converting units.

7. The audio reproducing apparatus as set forth

in claim 1, 2, 3, 4, 5, or 6,

wherein the input signals are signals of which audio signals of P channels (where $P \geq N$) have been converted into audio signals of Q channels (where $P > Q$), and

wherein the apparatus further comprises:

a converting circuit for converting the input signals of Q channels into the audio signals of N channels (where $P \geq N > Q$).

8. The audio reproducing apparatus as set forth in claim 1, 2, 3, 4, 5, or 6, further comprising:

output means for supplying output signals of said first signal processing circuit to the outside of the apparatus;

detecting means for detecting the motion of the head of the listener;

controlling means for controlling said second signal processing means corresponding to an output signal of said detecting means; and

means for wirelessly supplying audio signals to the M electric - acoustic converting units.